



REPLY TO:
HOVENSA L.L.C.
1 Estate Hope
Christiansted VI 00820-5652

September 24, 2010

CERTIFIED MAIL NO.: 7008 1830 0004 0470 7087
RETURN RECEIPT REQUESTED

Mr. Allan J. Steinberg, Regional Administrator
U.S. Environmental Protection Agency
Region II
290 Broadway, 25th Floor
New York, New York 10007-1866

**SUBJECT: Follow-up under CERCLA for Release Report No. 954517 Telephoned
to the National Response Center (NRC) September 19, 2010**

Dear Mr. Steinberg:

On September 19, 2010, the NRC was notified of a hydrogen sulfide (H₂S) release to the environment from the No. 2 Distillate Unifier at the HOVENSA LLC Refinery as required by 40 CFR 302.6. The NRC representative assigned the above-referenced number to this incident. As required by 40 CFR 355.40, a notification was also made to the Local Emergency Planning Committee (LEPC) and the State Emergency Response Commission (SERC) through the V. I. Department of Planning and Natural Resources. This letter fulfills the written follow up requirements for releases under 40 CFR 355.40(b) (3).

Owner and Facility Information

HOVENSA L.L.C.
No. 1 Estate Hope
Christiansted VI 00820-5652
(340) 692-3000

Description and Time of the Incident

At approximately 0602 hrs on September 19, 2010, a pipe leak developed on the washwater inlet of the No. 2 Distillate Unifier Reactor Effluent Condenser (E-812C) releasing water, hydrocarbon and H₂S into the atmosphere. The unit was depressured to flare and shutdown resulting in opacities at the No. 2 flare and No. 1 Incinerator.

HOVENSA L.L.C.

Mr. Alan J. Steinberg
U. S. Environmental Protection Agency

September 24, 2010
Page 2

Actions Taken to Respond to Contain the Release

The No. 2 Distillate Unifier unit was shut down as soon as possible. The feed streams were rerouted, heaters and compressors were shutdown and the unit was depressured to the No. 2 flare.

Name and Quantity Released

Approximately 179 pounds of H₂S were released as a consequence of this leak.

Any Known or Anticipated Acute or Chronic Health Risks

HOVENSA L.L.C. is unaware of any known or anticipated acute or chronic health risks associated with this release. Offsite impacts included visible droplets of Vacuum Gas Oil (VGO) on some neighborhoods and several odor complaints.

Medical Attention for Exposed Individuals

HOVENSA L.L.C. is unaware of any known medical attention for exposed individuals associated with this release.

If you require additional information, please feel free to contact me at (340) 692-3774.

Sincerely,



Kathleen C. Antoine
Environmental Director

KCA/IR/Im

cc: C. Soderberg (EPA-CEPD)
N. Noorhasan (DPNR-DEP)
B. Forbes (LEPC)

Incident Form
E-812C wash water line blew out and Opacity on No. 2 Flare.

Home Safely Departments HOVENSA Sites Phone

Kathleen Antoine (kantoine)
Wednesday, 12/15/2010 04:44 PM Atlantic Standard Time

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Plant Compliance Workspace E-812C wash water line bl...

Initiation Information Collection Analysis Approvals Close-Out Go Back

Cover Sheet Personal Injury Work Items Approvers Metrics Reports Questionnaire Attachments

Incident Number: eInc-10-0697 Object ID: 7080832

Author: [Urick Alexander \(ualexander\)](#)

Incident Type: [PSM](#)
[Environmental](#)

KT RCFA Methodology: [Area2](#)

Department: [Area2](#)

Owner: [LL-WF-II Managers and Designees - Area 2](#)

Date of Incident: [09/19/2010 06:00 AM](#)

Date Recorded: [09/19/2010 08:45 AM](#)

Incident Class: [Class II](#)

Incident Classification: [Operational Problems](#)
[Environmental](#)
[Product Release](#)
[Release to Atmosphere](#)

Environmental Checklist: [Release to Ground/Concrete](#)
[Release to Air](#)

Personal Injury: [Closed](#)

Report State: [FY 2010](#)

Reporting Period: [FY 2010](#)

Location

Area: [Area2](#)

Unit: [0800 No2 Distillate Unifiner](#)

Location Description: [North /south piperack on #2Distillate Unifiner](#)

Witnesses

Witnesses: [J.Gill](#)
[F.Thomas](#)
[U.Alexander](#)
[F.Thomas](#)

Incident Description

Incident Description: [At around 6:02am E-812C \(Reactor effluent condenser\),11/2" wash water inlet piping blew out releasing hydrocarbon and hydrogen to the atmosphere. The reactor circuit pressure was depressured to No. 2 flare causing an opacity.](#)

Facts: [At around 6:02am E-812C \(Reactor effluent condenser\),11/2" wash water inlet piping blew out releasing hydrocarbon and hydrogen to the atmosphere.The reactor circuit pressure was depressured to No. 2 flare causing an opacity.](#)

Immediate Corrective Action Taken: [Console operator, RPS and APS was immediately notified. Feed streams were rerouted,heaters were shut down and snuffing steam was introduced. C800A/C compressors were shut down and the unit was depressured to flare and secured.](#)

Preliminary Recommendations to Prevent Recurrence: [See Class 1 Incident report attached.](#)

Incident Investigation

Documents Requested (Select ALL that applies): 

General Categorization: 

Previous Comments: 

Line Rupture

[Hide All](#) 1 Comment(s)

Urick Alexander

09/19/2010 09:47 AM

Pending investigation





Class I

Incident Evaluation Summary Report

Evaluation Summary:

On September 19, 2010 Area II was in the process of water washing the Reactor effluent condensers E-812 A through H. At approximately 0600hrs the water wash piping (1 ½") inlet to E-812-C ruptured and release light vacuum gas oil hydrocarbons to the atmosphere. The vapor cloud alarm was sounded and No. 2 DU unit was shut down and isolated. The fire brigade was notified.

Findings:

- 1) November 21, 2008 water wash piping associated with E-812'S was inspected by the inspection department, the lowest reading for the water wash piping was .13" thickness; retirement age for the piping is .10" thickness as per "Hovensa Engineering Standards".
- 2) March 09, 2009 notification No. 10319427 (priority 3-"5 Days to 6 Mos") was written by inspection department to "replace all the 1 ½" water injection spools for No. 2DU E-812 (Reactor Effluent Coolers) exchangers. Original wall thickness was 0.28" and the fact we had replaced all similar water wash piping in # 4 DDD in 2008-2010 supported this request.
- 3) On December 10, 2009, Operations deferred the unit outage from March 2010 to September 2, 2010
- 4) On August 19, 2010, Operations deferred the unit outage on No. 2DU unit from September 2, 2010 to October 28, 2010 with out the proper documentation or appropriate "SME's".
- 5) There are no guidelines or procedure in place for water washing E-812's Condensers continuously.
- 6) E-812-C water wash piping ruptured on the 1 ½" inlet line.
- 7) The deposits from the water wash piping were checked by the Hovensa QC lab and found to be 21.6% loss of ignition, and 78.4% was fine rouge material i.e. iron oxide/ possible Iron sulfide.
- 8) D-820 water analysis: PH-6.3, Conductivity-85.1, CL-58ppm, O2- 40+ppb. This sample was from a stagnant D-820 tank following the use of fire water in the area, and may be higher in chlorides than what we actually inject.
- 9) P-822A & B "wash water feed pumps"- is a multistage pump, rated at 130 gpm with a discharge pressure of 1195 psi.
- 10) There were no individual flow meters installed at each water injection point to E-812's condensers, therefore the unit operators can not check for the flow readings to the E-812's condensers.

Findings Cont'd:

- 11) As per "Material Engineering Company" who inspected the ruptured 1 ½" water wash piping stated " The elbow deposit had a LOI of 22.1% volatile compounds. The remaining residue consists of approximately 24% iron sulfide and 76% iron oxide".
- 12) The elbow of the 1 ½" water wash piping that ruptured was partially plugged.
- 13) The water wash flow (0800FC0914) "PVlow" alarm came on intermittently, acknowledge by the console operators from August 1, 2010 to September 19,
- 14) At the time of the incident the wind direction was at 178.7 degrees.
- 15) At the time of the incident the wind speed was at 7.49 mph.
- 16) Operations rescheduled No. 2 DU unit outage from September 2, 2010 to October 28, 2010 with out following "Procedure No. 5324" "Deferral of process unit shutdown"
- 17) As per the unit engineer based on the injection rates to the water wash system of 20-30 gpm , the amount of free water going to the condensers was 0%.
- 18) D-802 (Reactor Effluent Separator) pressure was increased from 950 psi to 1020 psi from May 2010 to present.
- 19) The inlet temperature at E-812's was at 350 degrees at the time of the incident.
- 20) The partially plugged and corroded 1 ½" inlet line to E-812-C saw the process pressure of 1020 Psi and the temperature of 350 degrees.
- 21) From January -2009 to December-2009 the water wash flow to E-812'S condensers was at 0% intermittently for forty five (45) days.
- 22) From January 2010 to September 2010 the water wash flow to the E-812'S condensers was at 0% intermittently for 11 days.
- 23) 30 % of the 1 ½" water wash tubes plugged at the connection to the 3" supply header piping.
- 24) Normally the water wash can be confirmed by looking for the same temperature across the orifice that is due to the < 140 F water flowing temperature. When an orifice plugs in any other HDS unit where we water wash we have rather easy access to the valve, orifice, and bypass if so designed. This was not the case on the # 2HDS design. For some reason the whole water wash was placed over the fin fan tubes, which had the potential to add significant heat to the low flow water. We say low flow as the design was 128 GPM and we regularly see 20-35 GPM.
- 25) March 2007, a test was done by "S. Chow" pertaining to No. 2DU HPS water separation issue- see attached report.

RECOMMENDATIONS

- A. Perform an individual water wash of each fin fan next outage.
- B. After water washing an Infrared Scan of the header boxes must be performed on the inlet and outlet.
- C. Shoot a Thermal scan of the water wash lines during operation. Based on these results and our knowledge of pluggage in these water wash lines we may need to set up a scan every 3 months.
- D. Redesign the water wash system, including but not limited to:
 - Reduce line size to increase velocity to an acceptable level
 - Consider a material upgrade
 - Size the orifices for the new flow of water
 - Provide clear fresh water to the exchangers that have had the oxygen level reduced to a maximum of 50 PPB.
 - Consider the use of injection quills as per NACE, and API.
 - Install individual check valves at each water injection point.
 - Install magnetic or similar cheap flow meters at each flow injection location
 - Keep water quality better than we have in the past. Consider the use of BFW, condensate, or eliminate the open top tank such that the current system can be treated for oxygen.
- E. Based on the Inspection department recommendations review each HDS system that utilizes a water wash and apply lessons learned and best practice design such that we never experience another release such as we had.
- F. Return to once a week water sampling of all HDS HPS water samples such that we can optimize the water wash systems.
- G. Follow the Coker naphtha as to which unit or units it is being processed in and adjust the water wash accordingly
- H. Operations to follow up on piping recommendations made by the inspection department, and insure these are accounted for in any unit deferral. The use of current SOP's would have eliminated this incident.
- I. Operations to create a guideline or policy for water washing E-812-C
- J. Area II Operations to take a routine sample of D820 "Desal water drum" weekly

Incident Analysis

The E-812 condensers are equipped with a water wash piping system (made of 1 ½" pipe). Desalinated water is utilized for the water source. When there is not sufficient water pressure (as in a no water flow condition) in the water wash piping, hydrocarbons back into the water wash piping. The hydrocarbons contain H₂S, Chlorides, and Ammonia that can form corrosive salt deposits. When water pressure (flow) is restored, the water contacts and activates the corrosive salts. The result is aggressive corrosion in the water wash piping. Over time, the corrosion leads to pitting and thinning. In this case, the corrosion was severe enough that the water wash piping could no longer contain the process pressure of (1020 psi). The piping ruptured and LVGO was released in the atmosphere.

Action Item No.	Correctable Opportunity No.	Correctable Opportunity Description	Action Item Description	Responsible	Due Date
1	1	Hovensa did not follow the Deferral Procedure No. 5324 "Deferral of Process Unit shutdown" (A) COM 3 4	Hovensa to review Procedure No. 5324 "Deferral of Process Unit Shutdown" with applicable parties to ensure compliance.	P. Beharry OPS	3/31/2011
2	2	The Design contractor did not recognize the hazard of not installing check valves at the inlet of the condensers (A) COM 3 4	Install individual check valves at each water injection point	projects/ OPS U. Paul	next unit T/A
3	3	No. 2 DU unit water wash system lost water flow repeatedly (A) COM 1 2 3 4	To include all process variables for the desal water wash system including P-822-A/B in IntelaTrac	M. Douglas OPS	6/31/2011
4	4	Hovensa made the decision not to shut down the unit as planned with out proper documentations in place (A) COM 3 4	Hovensa to review Procedure No. 5324 "Deferral of Process Unit Shutdown" with applicable parties to ensure compliance.	P. Beharry OPS	3/31/2011

Repair and Business Interruption Costs:

Process

Business Interruption.....	Not Determined
Unit Start-up/Shut-down.....	Not Determined
Unit Circulation.....	Not Determined

Equipment Repair Cost

Material.....	0
Labor- Remote Shop.....	
Labor- Hovensa Shop.....	Not Determined
Clean up.....	Not Determined

Other

Investigation Cost.....	\$ 2,000.00
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Total Cost.....	\$ 2,000.00
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Team Signatures

<u>PRINT NAME</u>	<u>DEPARTMENT</u>	<u>DATE</u>	<u>SIGNATURE</u>
B. Williamson	Reliability	10-12-10	Bruce Williamson
P. Beharry	Ops	10-13-10	P. Beharry
C. Gross	Facility Engineers	10-12-10	Cynthia S. Gross
R. Charles	Ops	10/12/10	R. Charles
U. Paul	OPS	10/12/10	U. Paul
A. Beharry	PSM	10/12/10	A. Beharry
G. Daniel	Inspection	10/13/10	G. Daniel
L. Santiago	Tech Services	10/12/10	L. Santiago



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Christiansted VI 00820-5652
(340) 692-3000

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HOVENSA L.L.C.

Mr. Alan J. Steinberg
U. S. Environmental Protection Agency

September 24, 2010
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Actions Taken to Respond to Contain the Release

The No. 2 Distillate Unifier unit was shut down as soon as possible. The feed streams were rerouted, heaters and compressors were shutdown and the unit was depressured to the No. 2 flare.

Name and Quantity Released

Approximately 179 pounds of H₂S were released as a consequence of this leak.

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HOVENSA L.L.C. is unaware of any known or anticipated acute or chronic health risks associated with this release. Offsite impacts included visible droplets of Vacuum Gas Oil (VGO) on some neighborhoods and several odor complaints.

Medical Attention for Exposed Individuals

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If you require additional information, please feel free to contact me at (340) 692-3774.

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Kathleen C. Antoine
Environmental Director

KCA/IR/Im

cc: C. Soderberg (EPA-CEPD)
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B. Forbes (LEPC)

Incident Form
E-812C wash water line blew out and Opacity on No. 2 Flare.

Home Safely Departments HOVENSA Sites Phone

Kathleen Antoine (kantoine)
Wednesday, 12/15/2010 04:44 PM Atlantic Standard Time

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Plant Compliance Workspace E-812C wash water line bl...

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Cover Sheet Personal Injury Work Items Approvers Metrics Reports Questionnaire Attachments

Incident Number: eInc-10-0697 Object ID: 7080832

Author: [Urick Alexander \(ualexander\)](#)

Incident Type: [PSM](#)
[Environmental](#)

KT RCFA Methodology: [Area2](#)

Department: [Area2](#)

Owner: [LL-WF-II Managers and Designees - Area 2](#)

Date of Incident: [09/19/2010 06:00 AM](#)

Date Recorded: [09/19/2010 08:45 AM](#)

Incident Class: [Class II](#)

Incident Classification: [Operational Problems](#)
[Environmental](#)
[Product Release](#)
[Release to Atmosphere](#)

Environmental Checklist: [Release to Ground/Concrete](#)
[Release to Air](#)

Personal Injury: [Closed](#)

Report State: [FY 2010](#)

Reporting Period: [FY 2010](#)

Location

Area: [Area2](#)

Unit: [0800 No2 Distillate Unifiner](#)

Location Description: [North /south piperack on #2Distillate Unifiner](#)

Witnesses

Witnesses: [J.Gill](#)
[F.Thomas](#)
[U.Alexander](#)
[F.Thomas](#)

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Incident Description: [At around 6:02am E-812C \(Reactor effluent condenser\),11/2" wash water inlet piping blew out releasing hydrocarbon and hydrogen to the atmosphere. The reactor circuit pressure was depressured to No. 2 flare causing an opacity.](#)

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Preliminary Recommendations to Prevent Recurrence: [See Class 1 Incident report attached.](#)

Incident Investigation

Documents Requested (Select ALL that applies): 

General Categorization: 

Previous Comments: 

Line Rupture

[Hide All](#) 1 Comment(s)

Urick Alexander

09/19/2010 09:47 AM

Pending investigation





Class I

Incident Evaluation Summary Report

Evaluation Summary:

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- 6) E-812-C water wash piping ruptured on the 1 ½" inlet line.
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RECOMMENDATIONS

- A. Perform an individual water wash of each fin fan next outage.
- B. After water washing an Infrared Scan of the header boxes must be performed on the inlet and outlet.
- C. Shoot a Thermal scan of the water wash lines during operation. Based on these results and our knowledge of pluggage in these water wash lines we may need to set up a scan every 3 months.
- D. Redesign the water wash system, including but not limited to:
 - ➔ Reduce line size to increase velocity to an acceptable level
 - ➔ Consider a material upgrade
 - ➔ Size the orifices for the new flow of water
 - ➔ Provide clear fresh water to the exchangers that have had the oxygen level reduced to a maximum of 50 PPB.
 - ➔ Consider the use of injection quills as per NACE, and API.
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 - ➔ Install magnetic or similar cheap flow meters at each flow injection location
 - ➔ Keep water quality better than we have in the past. Consider the use of BFW, condensate, or eliminate the open top tank such that the current system can be treated for oxygen.
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- F. Return to once a week water sampling of all HDS HPS water samples such that we can optimize the water wash systems.
- G. Follow the Coker naphtha as to which unit or units it is being processed in and adjust the water wash accordingly
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- J. Area II Operations to take a routine sample of D820 "Desal water drum" weekly

Incident Analysis

The E-812 condensers are equipped with a water wash piping system (made of 1 ½" pipe). Desalinated water is utilized for the water source. When there is not sufficient water pressure (as in a no water flow condition) in the water wash piping, hydrocarbons back into the water wash piping. The hydrocarbons contain H₂S, Chlorides, and Ammonia that can form corrosive salt deposits. When water pressure (flow) is restored, the water contacts and activates the corrosive salts. The result is aggressive corrosion in the water wash piping. Over time, the corrosion leads to pitting and thinning. In this case, the corrosion was severe enough that the water wash piping could no longer contain the process pressure of (1020 psi). The piping ruptured and LVGO was released in the atmosphere.

Action Item No.	Correctable Opportunity No.	Correctable Opportunity Description	Action Item Description	Responsible	Due Date
1	1	Hovensa did not follow the Deferral Procedure No. 5324 "Deferral of Process Unit shutdown" (A) COM 3 4	Hovensa to review Procedure No. 5324 "Deferral of Process Unit Shutdown" with applicable parties to ensure compliance.	P. Beharry OPS	3/31/2011
2	2	The Design contractor did not recognize the hazard of not installing check valves at the inlet of the condensers (A) COM 3 4	Install individual check valves at each water injection point	projects/ OPS U. Paul	next unit T/A
3	3	No. 2 DU unit water wash system lost water flow repeatedly (A) COM 1 2 3 4	To include all process variables for the desal water wash system including P-822-A/B in IntelaTrac	M. Douglas OPS	6/31/2011
4	4	Hovensa made the decision not to shut down the unit as planned with out proper documentations in place (A) COM 3 4	Hovensa to review Procedure No. 5324 "Deferral of Process Unit Shutdown" with applicable parties to ensure compliance.	P. Beharry OPS	3/31/2011

Repair and Business Interruption Costs:

Process

Business Interruption.....	Not Determined
Unit Start-up/Shut-down.....	Not Determined
Unit Circulation.....	Not Determined

Equipment Repair Cost

Material.....	0
Labor- Remote Shop.....	
Labor- Hovensa Shop.....	Not Determined
Clean up.....	Not Determined

Other

Investigation Cost.....	\$ 2,000.00
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Total Cost.....	\$ 2,000.00
------------------------	--------------------

Team Signatures

<u>PRINT NAME</u>	<u>DEPARTMENT</u>	<u>DATE</u>	<u>SIGNATURE</u>
B. Williamson	Reliability	10-12-10	Bruce Williamson
P. Beharry	Ops	10-13-10	P. Beharry
C. Gross	Facility Engineers	10-12-10	Cynthia S. Gross
R. Charles	Ops	10/12/10	R. Charles
U. Paul	OPS	10/12/10	U. Paul
A. Beharry	PSM	10/12/10	A. Beharry
G. Daniel	Inspection	10/13/10	G. Daniel
L. Santiago	Tech Services	10/12/10	L. Santiago